Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A network access server (NAS) providing a user with access and connection to a global data communications internetwork, said NAS being capable of communicating with a home gateway server (HGS) associated with a home domain, said NAS comprising:

an HGS identifier for identifying the HGS associated with the home domain to which the request for an IP address is to be transmitted, wherein the HGS identifier is responsive to log-in information provided by the user;

an IP address requester for requesting an IP address from the HGS, ~~on behalf of a user without using a tunneling protocol,~~ the HGS maintaining a pool of IP addresses for allocation to authorized users;

an IP address relayer for receiving an IP address allocated to the user from the HGS and for relaying the allocated IP address to the user; and

a memory coupled with said IP address requester and said IP address relayer, said memory storing an association between an identification of the user and the IP address allocated to the user.

2. (Previously Presented) The network access server of claim 1, further comprising:

a detector for periodically detecting connection of the user to the NAS, said detector updating the association in said memory to indicate that the allocated IP address is no longer in use if the connection of the user is lost.

3. (Previously Presented) The network access server of claim 1, further comprising:

a receiver for receiving periodic queries from the HGS about the status of the user connection to the NAS; and

a responder responsive to the periodic queries for informing the HGS that the user is still connected to the NAS.

4. (Original) The network access server of claim 1, further comprising:

a receiver for receiving periodic signals from the user;

a forwarder responsive to said receiver for forwarding information to the HGS that the user is still connected to the NAS.

5-8. (Canceled)

9. (Previously Presented) The network access server of claim 1, wherein the HGS identifier is responsive to call information associated with the incoming line used by the user to access the NAS.

10-12. (Canceled)

13. (Original) The network access server of claim 1, further comprising:

a generator, responsive to the receipt of a disconnection request from the user, for generating and sending a notice to the HGS that the user is no longer connected to the NAS.

14-20. (Canceled)

21. (Currently Amended) A method for providing an IP address to a user in a data communications network, the method comprising:

establishing a connection with a user;

receiving authentication information from the user, the authentication information including a user identification;

storing the user identification in a memory;

determining a home domain for said user, wherein said determining is responsive to said receiving;

requesting an IP address from an HGS associated with said home domain ~~on behalf of the user without using a tunneling protocol~~, the HGS maintaining a pool of IP addresses for allocation to authorized users;

receiving an IP address allocated to the user from the HGS;

creating and storing an association between the user identification and the allocated IP address in the memory;

transmitting the allocated IP address to the user; and

providing the user with access and connection to a global data communications internetwork.

22. (Previously Presented) The method of claim 21, further comprising:

detecting a continuing connection with the user; and

sending periodic keep-alive messages associated with the user to the HGS as long as the continuing connection with the user is detected.

23. (Previously Presented) The method of claim 21, further comprising:

receiving periodic queries from the HGS about the status of the user connection; and

responding to the periodic queries that the user is still connected.

24. (Previously Presented) The method of claim 21, further comprising:

receiving periodic in-use signals from the user; and

forwarding information to the HGS that the user is still connected.

25. (Canceled)

26. (Currently Amended) A program storage device readable by a machine, tangibly embodying a program of instructions readable by the machine to perform a method for providing an IP address to a user in a data communications network, the method comprising:

establishing a connection with a user;

receiving authentication information from the user, the authentication information including a user identification;

storing the user identification in a memory;

determining a home domain for said user, wherein said determining is responsive to said receiving;

requesting an IP address from an HGS associated with said home domain on behalf of the user ~~without using a tunneling protocol~~, the HGS maintaining a pool of IP addresses for allocation to authorized users;

receiving an IP address allocated to the user from the HGS;

creating and storing an association between the user identification and the allocated IP address in the memory;

transmitting the allocated IP address to the user; and

providing the user with access and connection to a global data communications internetwork.

27. (Previously Presented) The program storage device of claim 26, wherein the method further comprises:

detecting a continuing connection with the user; and

sending periodic keep-alive messages associated with the user to the HGS as long as the continuing connection with the user is detected.

28. (Previously Presented) The program storage device of claim 26, wherein the method further comprises:

receiving periodic queries from the HGS about the status of the user connection; and

responding to the periodic queries that the user is still connected.

29. (Previously Presented) The program storage device of claim 26, wherein the method further comprises:

receiving periodic queries from the HGS about the status of the user connection; and

responding to the periodic queries that the user is still connected.

30-44. (Canceled)

45. (Currently Amended) An apparatus for providing an IP address to a user in a data communications network, the apparatus comprising:

means for establishing a connection with a user;

means for receiving authentication information from the user, the authentication information including a user identification;

means for storing the user identification in a memory;

means for determining a home domain for said user, wherein said determining is responsive to said receiving;

means for requesting an IP address from an HGS associated with said home domain on behalf of the user ~~without using a tunneling protocol~~, the HGS maintaining a pool of IP addresses for allocation to authorized users;

means for receiving an IP address allocated to the user from the HGS;

means for creating and storing an association between the user identification and the allocated IP address in the memory;

means for transmitting the allocated IP address to the user; and

means for providing the user with access and connection to a global data communications internetwork.

46. (Previously Presented) The apparatus of claim 45, further comprising:

means for detecting a continuing connection with the user; and

means for sending periodic keep-alive messages associated with the user to the HGS as long as the continuing connection with the user is detected.

47. (Previously Presented) The apparatus of claim 45, further comprising:

means for receiving periodic queries from the HGS about the status of the user connection; and

means for responding to the periodic queries that the user is still connected.

48. (Previously Presented) The apparatus of claim 47, further comprising:

means for receiving periodic in-use signals from the user; and

means for forwarding information to the HGS that the user is still connected.

49. (Canceled)

50. (Previously Presented) The network access server in accordance with claim 2, further comprising:

a keep-alive sender coupled to said detector, said keep-alive sender periodically informing the HGS that the user is still connected to the NAS until the connection is lost.

51. (Previously Presented) The network access server in accordance with claim 1 wherein said IP address requester transmits the user's authentication information to the HGS with the request for an IP address.

52. (Previously Presented) The network access server in accordance with claim 1 wherein said IP address requester uses Remote Authentication Dial In User Service (RADIUS).

53. (Previously Presented) The method in accordance with claim 21 wherein said requesting includes:

transmitting the user's authentication information to the HGS.

54. (Previously Presented) The method in accordance with claim 22, further comprising:

updating the association in said memory to indicate that the allocated IP address is no longer in use if the connection is lost.

55. (Previously Presented) The method in accordance with claim 21, further comprising:

receiving a disconnection request from the user; and

generating and sending a notice to the HGS that the user is no longer connected.

56. (Previously Presented) The method in accordance with claim 25, wherein said determining is in response to log-in information provided by the user.

57. (Previously Presented) The method in accordance with claim 25, wherein said determining is in response to call information associated with an incoming line used by the user.

58. (Previously Presented) The apparatus in accordance with claim 45 wherein said means for requesting includes:

means for transmitting the user's authentication information to the HGS.

59. (Previously Presented) The apparatus in accordance with claim 46, further comprising:

means for updating the association in said memory to indicate that the allocated IP address is no longer in use if the connection is lost.

60. (Previously Presented) The apparatus in accordance with claim 45, further comprising:

means for receiving a disconnection request from the user; and

means for generating and sending a notice to the HGS that the user is no longer connected.

61. (Previously Presented) The apparatus in accordance with claim 49, wherein said means for determining performs in response to log-in information provided by the user.

62. (Previously Presented) The apparatus in accordance with claim 49, wherein said means for determining performs in response to call information associated with an incoming line used by the user.

63. (Previously Presented) The network access server in accordance with claim 1 wherein said memory stores the association as long as the user maintains the connection with said NAS.

64. (Previously Presented) The network access server of claim 1, wherein the global data communications internetwork is the Internet.

65. (Previously Presented) The method of claim 21, wherein the global data communications internetwork is the Internet.

66. (Previously Presented) The program storage device of claim 26, wherein the global data communications internetwork is the Internet.

67. (Previously Presented) The apparatus of claim 45, wherein the global data communications internetwork is the Internet.

68. (Previously Presented) The network access server of claim 1 wherein the user belongs to the home domain.

69. (Previously Presented) The method of claim 21 wherein the user belongs to the home domain.

70. (Previously Presented) The program storage device of claim 26 wherein the user belongs to the home domain.

71. (Previously Presented) The apparatus of claim 45 wherein the user belongs to the home domain.

72. (Previously Presented) The method of claim 20, wherein said requesting includes transmitting the user's authentication information with the request for an IP address.

73. (Previously Presented) The program storage device of claim 26, wherein said requesting includes transmitting the user's authentication information with the request for an IP address.

74. (Previously Presented) The apparatus of claim 45, wherein said means for requesting includes means for transmitting the user's authentication information with the request for an IP address.